

LABORATORY REPORT
Application Development Lab
(CS33002)

B.Tech Program in CSE

Submitted By

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Experiment Number	7
Experiment Title	Database Management Using Flask
Date of Experiment	20/03/2025
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Experiment 7: Database Management Using Flask

Objective:

To develop an application for user authentication and document sharing.

Detailed Procedure:

- 1. Install MySQL workbench in your system and install flask-mysqldb package.**
- 2. Create a database where you wish to store your user name and the password**
- 3. Implement user authentication/registration form using Flask and the database. For a new user the account is created using the ‘signup’ button. Existing users can directly login with their credentials.**
- 4. Inside the users can update their personal details, reset their passwords.**
- 5. Inside the users can see the grades for their marks, which they cannot edit personally**
- 6. Build a responsive frontend for user interactions.**

Code:- From next page as follows

app.py, base.html, dashboard.html, edit_profile.html, enter_grades.html, login.html, register.html, style.css(Not possible due to huge length).

```

1 from flask import Flask, render_template, request, redirect, url_for, session
2 from flask_mysql import MySQL
3 import MySQLdb, cursors
4
5 app = Flask(__name__)
6 app.config['SECRET_KEY'] = 'your_secret_key_here'
7 app.config['MYSQL_HOST'] = 'localhost'
8 app.config['MYSQL_USER'] = 'root'
9 app.config['MYSQL_PASSWORD'] = 'pass123'
10 app.config['MYSQL_DB'] = 'gradehub'
11
12 mysql = MySQL(app)
13
14 # Route for base template
15 @app.route('/')
16 def home():
17     if 'loggedin' in session:
18         return redirect(url_for('dashboard'))
19     else:
20         return render_template('base.html')
21
22 # Route for login
23 @app.route('/login', methods=['GET', 'POST'])
24 def login():
25     if request.method == 'POST':
26         username = request.form.get('username')
27         password = request.form.get('password')
28         cursor = mysql.connection.cursor(MySQLdb.cursors.DictCursor)
29         cursor.execute('SELECT * FROM users WHERE username = %s AND password = %s', (username, password))
30         account = cursor.fetchone()
31         if account:
32             session['loggedin'] = True
33             session['id'] = account['id']
34             session['username'] = account['username']
35             return redirect(url_for('dashboard'))
36         else:
37             return 'Incorrect username/password!'
38     return render_template('login.html')
39
40 # Route for registration
41 @app.route('/register', methods=['GET', 'POST'])
42 def register():
43     if request.method == 'POST':
44         username = request.form.get('username')
45         email = request.form.get('email')
46         password = request.form.get('password')
47         cursor = mysql.connection.cursor()
48         cursor.execute('INSERT INTO users VALUES(NULL, %s, %s, %s)', (username, email, password))
49         mysql.connection.commit()
50         cursor.close()
51         return redirect(url_for('login'))
52     return render_template('register.html')
53
54 # Route for dashboard
55 @app.route('/dashboard')
56 def dashboard():
57     if 'loggedin' in session:
58         cursor = mysql.connection.cursor(MySQLdb.cursors.DictCursor)
59         cursor.execute('SELECT * FROM grades WHERE user_id = %s', (session['id'],))
60         grades = cursor.fetchall()
61         return render_template('dashboard.html', grades=grades)
62     return redirect(url_for('login'))
63
64 # Route for editing profile
65 @app.route('/edit_profile', methods=['GET', 'POST'])
66 def edit_profile():
67     if 'loggedin' in session:
68         if request.method == 'POST':
69             email = request.form.get('email')
70             cursor = mysql.connection.cursor()
71             cursor.execute('UPDATE users SET email = %s WHERE id = %s', (email, session['id']))
72             mysql.connection.commit()
73             cursor.close()
74             return 'Profile updated!'
75         return render_template('edit_profile.html')
76     return redirect(url_for('login'))
77
78 @app.route('/logout')
79 def logout():
80     session.pop('loggedin', None)
81     session.pop('id', None)
82     session.pop('username', None)
83     return redirect(url_for('login'))
84
85 @app.route('/enter_grades', methods=['GET', 'POST'])
86 def enter_grades():
87     if 'loggedin' in session:
88         cursor = mysql.connection.cursor()
89         cursor.execute('SELECT * FROM users')
90         users = cursor.fetchall()
91         if request.method == 'POST':
92             user_id = request.form.get('user_id')
93             subject = request.form.get('subject')
94             grade = request.form.get('grade')
95
96             # Check if user_id is valid
97             cursor.execute('SELECT * FROM users WHERE id = %s', (user_id,))
98             user = cursor.fetchone()
99             if user:
100                 cursor.execute('INSERT INTO grades VALUES(NULL, %s, %s, %s)', (user_id, subject, grade))
101                 mysql.connection.commit()
102                 cursor.close()
103                 return 'Grade entered successfully!'
104             else:
105                 return 'User does not exist. Please register the user first.'
106         return render_template('enter_grades.html', users=users)
107     return redirect(url_for('login'))
108
109 if __name__ == '__main__':
110     app.run(debug=True)
111
112
113
114
115
116

```

```

1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="UTF-8">
5   <meta name="viewport" content="width=device-width, initial-scale=1.0">
6   <title>Gradehub</title>
7   <link rel="icon" href="images/favicon.ico" type="image/x-icon">
8   <link rel="stylesheet" href="{{ url_for('static', filename='style.css') }}">
9 </head>
10 <body>
11   <nav>
12     <ul>
13       {% if 'loggedin' in session %}
14         <li><a href="{{ url_for('dashboard') }}">Dashboard</a></li>
15         <li><a href="{{ url_for('edit_profile') }}">Edit Profile</a></li>
16         <li><a href="{{ url_for('enter_grades') }}">Enter Grades</a></li>
17         <li><a href="{{ url_for('logout') }}">Logout</a></li>
18       {% else %}
19         <li><a href="{{ url_for('login') }}">Login</a></li>
20         <li><a href="{{ url_for('register') }}">Register</a></li>
21       {% endif %}
22     </ul>
23   </nav>
24   <header>
25     <h1>👋 Welcome to Gradehub</h1>
26     <p>Your one-stop solution for managing grades and assignments. 🎓</p>
27     <a href="{{ url_for('register') }}" class="btn">Get Started</a>
28   </header>
29   <div class="content">
30     {% block content %}{% endblock %}
31   </div>
32   <footer>
33     <p>© 2025 Gradehub. All rights reserved.</p>
34   </footer>
35 </body>
36 </html>
37

```

```

1 {% extends 'base.html' %}
2
3 {% block content %}
4 <div class="dashboard-container">
5   <h1>Dashboard</h1>
6   <table>
7     <tr>
8       <th>Subject</th>
9       <th>Grade</th>
10    </tr>
11    {% for grade in grades %}
12      <tr>
13        <td>{{ grade.subject }}</td>
14        <td>{{ grade.grade }}</td>
15      </tr>
16    {% endfor %}
17  </table>
18 </div>
19 {% endblock %}
20

```

```

1 {% extends 'base.html' %}
2
3 {% block content %}
4 <div class="edit-profile-container">
5   <h1>Edit Profile</h1>
6   <form action="" method="post">
7     <label for="email">Email:</label>
8     <input type="email" name="email" required><br><br>
9     <input type="submit" value="Update">
10   </form>
11 </div>
12 {% endblock %}
13

```

```

1 {% extends 'base.html' %}
2
3 {% block content %}
4 <div class="enter-grades-container">
5   <h1>Enter Grades</h1>
6   <form action="" method="post">
7     <label for="user_id">Student ID:</label>
8     <select name="user_id">
9       {% for user in users %}
10        <option value="{{ user.id }}">{{ user.username }} (ID: {{ user.id }})</option>
11      {% endfor %}
12    </select><br><br>
13    <label for="subject">Subject:</label>
14    <input type="text" name="subject" required><br><br>
15    <label for="grade">Grade:</label>
16    <input type="number" step="0.01" name="grade" required><br><br>
17    <input type="submit" value="Submit Grade">
18  </form>
19 </div>
20 {% endblock %}
21

```

```

1 {% extends 'base.html' %}
2
3 {% block content %}
4 <div class="login-container">
5   <h1>Login</h1>
6   <form action="" method="post">
7     <label for="username">Username:</label>
8     <input type="text" name="username" required><br><br>
9     <label for="password">Password:</label>
10    <input type="password" name="password" required><br><br>
11    <input type="submit" value="Login">
12  </form>
13 </div>
14 {% endblock %}
15

```

```

1 {% extends 'base.html' %}
2
3 {% block content %}
4 <div class="register-container">
5   <h1>Register</h1>
6   <form action="" method="post">
7     <label for="username">Username:</label>
8     <input type="text" name="username" required><br><br>
9     <label for="email">Email:</label>
10    <input type="email" name="email" required><br><br>
11    <label for="password">Password:</label>
12    <input type="password" name="password" required><br><br>
13    <input type="submit" value="Register">
14  </form>
15 </div>
16 {% endblock %}
17

```

4. Results/Output:- Entire Screen Shot including Date & Time

The image displays three sequential screenshots of the Gradehub web application interface. The top screenshot shows the login and register page with a blue header and a 'Welcome to Gradehub' message. The middle screenshot shows the dashboard with a table of subjects and grades. The bottom screenshot shows the login form with fields for username and password.

Dashboard Table:

Subject	Grade
History	99.99
Bio	97.88
Maths	99.97

5. Remarks:-

Signature of the Student

Apratim Dutta
(Name of the Student)

Signature of the Lab Coordinator

_____(Name of the Coordinator)